Commonwealth of Kentucky
Division for Air Quality

PERMIT STATEMENT OF BASIS

Title V No. V-03-038 Revision 1
AUSTIN, NICHOLS & CO., INCORPORATED
(FORMER BOULEVARD DISTILLERS AND IMPORTERS, INC.)
Lawrenceburg, KY.
April 20, 2005

Reviewer:	Ben Markin
Source I.D. #:	021-005-00003 (facility)
	021-005-00007 (warehouse)
Source A.I. #:	28
Activity #:	APE20050001

CURRENT PERMITING ACTION-*Minor Modification*

Applications to modify their operating permit application were received from Austin, Nichols & Co. Incorporated on March 29, 2005. The facility modification includes installation of three 40,000 (120,000) barrels to the Bourbon Aging Warehouses at the distillery in Lawrenceburg, Kentucky. This will increase the maximum raw material processing rate for Emission Unit 4001 from 215,487 barrels per year to 335,487 barrels per year. Emissions from the modification will be 414 tons per year fugitive volatile organic compounds (VOC). Calculation for the emissions was based on the emission factor of 6.9 lbs of VOC/barrel/year, AP-42 Table 9.12.3-1. The addition of the three 40,000, each barrels does not trigger a prevention of significant deterioration (PSD) review for the facility, nor is it a significant modification under Title I of the Clean Air Act. In accordance with 40 CFR 52.21 and 401 KAR 51:005, the maximum potential emissions for all regulated pollutants from the proposed unit were calculated based on 8760 hours per year.

PAST PERMITING ACTION:-INTIAL SOURCEWIDE TITLE V PERMIT

Effective January 1, 2003, Boulevard Distillers & Importers, Incorporated changed their name to Austin, Nichols & Co., Incorporated. Austin, Nichols & Co. Incorporated is also the owner of the warehouse facility in Lawrenceburg (ID# 021-005-00007), which stores product made at the distillery (ID # 021-005-00003). The distillery is also known as the Wild Turkey Distillery.

Grain is unloaded from trucks and processed by a fermentation and distilling process into ethanol. Spent grain or stillage is removed as a mixture of water and grain or dried and loaded out as distillers dry grain. Ethanol is stored in barrels at the distillery and in barrels at an off-site warehouse. After an aging process, the aged bourbon is removed from the barrels, processed, bottled, labeled, and packaged in boxes. A natural gas furnace is on-site for supplying heated air to the spent grain dryer. There is also one coal-fired boiler and one natural gas-fired boiler for steam production.

The facility is classified as a major source of air pollution based on the potential to emit more than 100 tons per year (tpy) of sulfur dioxide (SO_2), nitrogen oxides (NO_x), and carbon monoxide (CO).

The following is a list of significant emission units.

E. Unit 1001: Grain Receiving

E. Unit 2001: Fermentation Vats

E. Unit 3001: Ring dryer/Process Cyclone 1

E. Unit 3002: Process Cyclone 2 - Feed to Silo

E. Unit 3003: Natural Gas Furnace for Ring Dryer

E. Unit 4001: Barrel Filling

E. Unit 4002: Aging

E. Unit 4003: Barrel Dumping

E. Unit 5001: Outside Processing Bottling Tanks

E. Unit 5002: Inside Processing Bottling Tanks

E. Unit 5003: Fill Lines

E. Unit 5004: Pumps, Valves, and Fittings

E. Unit 6001: Underfeed Stoker Coal-Fired Indirect Heat Exchanger

E. Unit 7001: Horizontally Opposed Natural Gas-fired Indirect Heat Exchanger

E. Unit 8001: Distillers Dry Grain Loading

COMMENTS:

E. Unit 1001: Grain Receiving

Grain is unloaded from trucks onto grates into underground hoppers. The grain unloading has fugitive particulate matter (PM) emissions. The maximum throughput of grain per year is 6.67 tons/hr. AP-42 Table 9.9.1-1 was used to determine average emission factors for PM and PM-10 for grain unloading from straight trucks (25%) and hopper trucks (75%).

Pursuant to KAR 63:010, Section 3, reasonable precautions shall be taken to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, when applicable, but not limited to the installation and utilization of hoods, fans, and fabric filters to enclose and vent the emissions generated from the processing of dust generating materials, or use of water sprays or other measures to suppress the dust emissions during handling. Pursuant to 401 KAR 63:010, Section 3, discharge of visible fugitive emissions beyond the property line is prohibited.

The permittee shall monitor the amount of grain received and processed on a monthly basis. Records of grain received and processed shall be maintained on a monthly basis.

E. Unit 2001: Fermentation Vats

Cooked grain/water mixture is fed into fermenter vessels as a batch operation to convert the sugars to ethanol. Based on a maximum of 1,642,500 tons of grain processed/yr and approximately 50 lbs of grain/bushel, the average hourly grain processing rate over the year is 7.5 (1000 bushels grain)/hr. Volatile organic compounds (VOCs) are emitted from the fermentation vats, primarily as ethanol. AP-42 Table 9.12.3-1 lists emission factors for four specific volatile organic compounds from fermentation vats for distilled spirits.

There are no applicable regulations for the fermentation vats. The permittee shall monitor the proof gallons produced on a monthly basis. Records of proof gallons produced shall be maintained on a monthly basis.

E. Unit 3001: Ring Dryer/Process Cyclone 1
E. Unit 3002: Process Cyclone 2 - Feed to Silo
E. Unit 3003: Propane Furnace for Ring Dryer

A mixture of water and grain from the bottom of the fermentation vats (still bottoms) is fed to a spent stillage tank. Since approximately 1998, all of the spent stillage has been loaded out as a wet cake without going through the drying process.

For the drying process, air is heated by a natural gas burner and goes through a ring dryer. The furnace is a 17 mmBtu/hr unit. Emissions from the furnace are based on AP-42, section 1.5. Spent stillage goes through the ring dryer, mixed with the heated air, and fed to process cyclone 1. Some of the heated air, particulate emissions, and steam go from process cyclone 1 out a stack. The PM emissions from the stack from process cyclone 1 were tested in 1976. Assuming a maximum rate of 2.2 tons of dried grain/hr, the emission factor from the ring dryer/process cyclone 1 is 3.198/2.2 = 1.45 lbs of PM/ton of dried grain. The processing rate through the ring dryer/process cyclone was not documented while testing emissions from the unit.

The dryer grain and some heated air from process cyclone 1 then goes to process cyclone 2. The solids (distiller's dried grain) from process cyclone 2 go to a distiller's dried grain silo. PM emissions, with some steam and heated air go out a stack from process cyclone 2. PM emissions from this stack have not been tested.

Pursuant to 401 KAR 59:010, Section 3(2), particulate emissions into the open air shall not exceed $[3.59(P)^{0.62}]$ lbs/hour based on a three-hour-average where P is the processing rate in tons/hour. For compliance with the PM emission limit, an emission factor of 1.45 lbs PM/ton of raw material processed through the unit shall be used, based on the 1976 stack test for process cyclone 1 (assuming maximum raw material processing rate through the unit), until new information is gathered from the stack tests that shall be performed within 6 months from start-up of the units. Emission factors derived from stack testing are to replace the emission factor currently listed in the permit, and shall be used to calculate future emissions.

Pursuant to 401 KAR 59:010, Section 3(1)(a), any continuous emissions into the open air shall not equal or exceed 20% opacity based on a six-minute-average. The permittee shall perform a

qualitative visual observation of the opacity of emissions from each stack on a weekly basis and maintain a log of the observations. If visible emissions from each stack are seen (not including condensed water vapor within the plume), then the opacity shall be determined by Reference Method 9 and an inspection shall be initiated of control equipment for any and all necessary repairs.

The permittee shall retain records of the following: grain processed and hours of operation shall be maintained on a weekly basis; weekly qualitative opacity readings from each stack; and the opacity determined by Reference Method 9, when taken, and documentation of any repairs that were made due to any opacity reading, which exceeded the standard.

E. Unit 4001: Barrel Filling
E. Unit 4002: Aging
E. Unit 4003: Barrel Dumping

There are no applicable regulations for the filling, aging, and dumping of the ethanol mixture from the barrels. Emissions from the barrel filling are based on an emission factor of 0.0005831 lbs VOC/gallon. The maximum throughput for filling or dumping of the barrels is 5830 gallons/hr. Emissions from the barrel dumping are based on an emission factor of 0.0002987 lbs VOC/gallon.

Emissions from the aging are based on AP-42 Table 9.12.3-1 emission factor of 6.9 lbs of VOC/barrel. The maximum yearly storage at the distillery is 215,487 barrels. The maximum yearly storage at the warehouse is 67,818 barrels.

The permittee shall monitor and record the number of barrels stored at each location (distillery and warehouse) on a yearly basis.

E. Unit 5001: Outside Processing Bottling Tanks
E. Unit 5002: Inside Processing Bottling Tanks
E. Unit 5003: Fill Lines
E. Unit 5004: Pumps, Valves, and Fittings

The tanks and lines were constructed or last modified on or before 1969 for processing the aged bourbon. There are no applicable regulations for these units. The maximum production rate through the outside processing bottling tanks is 31,804,712 gallons/yr with an emission factor of 0.00204 lbs VOC/gallon. The maximum production rate through the inside processing bottling tanks is 45,236,359 gallons/yr with an emission factor of 0.003195 lbs VOC/gallon. The maximum production rate through the fill lines is 86,286,000 gallons/yr with an emission factor of 0.0006 lbs of VOC/gallon. There are approximately 550 potential leak locations from valves, seals, or fittings, with an average emission factor of 0.00913242 lbs of VOC/location. The permittee shall monitor and record the proof gallons processed on a yearly basis.

E. Unit 6001: Underfeed Stoker Coal-Fired Indirect Heat Exchanger

The unit is a 41.1 mmBtu/hr underfeed stoker coal-fired boiler for the production of steam. It was constructed in 1982. There is another post 4/9/72 boiler, E. Unit 7001 – 70.2 mmBtu/hr natural gas-fired boiler for production of steam also.

The total heat input capacity for the source (facility) is 111.3 mm Btu/hr. Pursuant to 401 KAR 59:015, PM emissions shall not exceed (0.9634)/(111.3)^(0.2356) = 0.317 lb/mmBtu, and SO_2 emissions shall not exceed (13.8781)/(111.3)^(0.4434) = 1.72 lbs/mmBtu.

Pursuant to operating permit O-84-112 (Amended), PM shall not exceed 0.321 lb/mmBtu, and SO_2 emissions shall not exceed 1.75 lbs/mmBtu. The operating permit was based on an inaccurate heat capacity of emission unit 6001.

Pursuant to Title V permit V-98-042, PM shall not exceed 0.317 lb/mmBtu, emissions shall not exceed 20% opacity, and SO_2 emissions shall not exceed 1.72 lb/mmBtu. These restrictions are also used in the revised Title V permit.

The unit was tested on November 13, 2001 for PM. At an average PM emission of 0.2370 lb/mmBtu and a heating value of 27.268 mmBtu/ton, the emission factor is 6.46 lbs of PM/ton of coal. The permittee shall perform at least one performance test for particulate emissions within two years from the issuance of this permit.

Compliance with the sulfur dioxide standard may be demonstrated by calculating sulfur dioxide emissions using the AP-42 emission factor (31 x percent sulfur in coal lb/ton) divided by the coal heating value in mmBtu/ton.

The permittee shall monitor the heating value, ash and sulfur content of coal by performing analysis on each shipment of coal received; the amount of fuel combusted on a monthly basis; and the permittee shall calculate the emissions of sulfur dioxide on a monthly basis.

The permittee shall perform a qualitative visual observation of the opacity of emissions from each stack on a daily basis and maintain a log of the observations. If visible emissions from each stack are seen (not including condensed water vapor within the plume), then the opacity shall be determined by Reference Method 9 and an inspection shall be initiated of control equipment for any and all necessary repairs.

The permittee shall maintain the records of the fuel analysis; the amount of fuel combusted on a weekly basis; the monthly sulfur dioxide emissions and summarize them on a 12-month rolling average; daily qualitative opacity readings from each stack; and the opacity determined by Reference Method 9, when taken, and documentation of any repairs that were made due to any opacity reading, which exceeded the standard.

E. Unit 7001: Horizontally-opposed Natural Gas-fired Indirect Heat Exchanger

The unit is a 70.2 mmBtu/hr natural gas-fired boiler for production of steam, constructed in 1977. There is another post 4/9/72 boiler, E. Unit 6001 – 41.1mmBtu/hr natural gas-fired boiler for production of steam also.

The total heat input capacity for the source (facility) is 111.3 mm Btu/hr. Pursuant to 401 KAR 59:015, PM emissions shall not exceed (0.9634)/(111.3)^(0.2356) = 0.317 lb/mmBtu, and SO_2

emissions shall not exceed (7.7223)/(111.3)^(0.4106) = 1.12 lbs/mmBtu.

Pursuant to operating permit O-84-112 (Amended), PM emissions shall not exceed 0.314 lb/mmBtu, and SO_2 emissions shall not exceed 1.09 lbs/mmBtu.

Pursuant to the Title V permit V-98-042, PM shall not exceed 0.314 lb/mmBtu, emissions shall not exceed 20% opacity, and sulfur dioxide emissions shall not exceed 1.09 lb/mmBtu. These restrictions are also used in the revised Title V permit.

While burning natural gas, this unit is considered to be in compliance with the PM, SO_2, and opacity standards. Emissions are based on emission factors from AP-42, section 1.4, for all criteria pollutants.

The permittee shall determine the opacity of emissions from the stack using U.S. EPA Reference Method 9 annually, or more frequently if requested by the Division. The permittee shall monitor and record the amount of natural gas combusted on a monthly basis.

E. Unit 8001: Distillers Dry Grain Loading

Distiller's dry grain is unloaded from the distiller's dry grain silo onto trucks. The grain unloading has fugitive particulate matter (PM) emissions. The maximum throughput of grain per year is 131,400 tons. AP-42 Table 9.9.1-1 was used to determine average emission factors for PM and PM-10 for grain shipping to a truck.

Pursuant to KAR 63:010, Section 3, reasonable precautions shall be taken to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, when applicable, but not limited to the installation and utilization of hoods, fans, and fabric filters to enclose and vent the emissions generated from the processing of dust generating materials, or use of water sprays or other measures to suppress the dust emissions during handling. Pursuant to 401 KAR 63:010, Section 3, discharge of visible fugitive emissions beyond the property line is prohibited.

The permittee shall monitor and record the amount of distillers dry grain loaded on a monthly basis.

Regulations not applicable to Emissions Units 06 and 07 due to applicability date and/or size of unit:

Regulation 401 KAR 60:042, Standards of performance for industrial-commercial-institutional steam generating units, incorporating by reference Title 40 CFR, Part 60, Subpart Db, applicable to an emissions unit of greater than 100 mmBtu/hour and constructed after June 19,1984

Regulation 401 KAR 60:043, Standards of performance for small industrial-commercial-institutional steam generating units, incorporating by reference 40 CFR Part 60, Subpart Dc, applicable to an

emissions unit with a design capacity of 100 mmBtu/hour or less and greater than or equal to 10 mmBtu/hour and constructed after June 9, 1989.

Regulation not applicable to Emission Unit 05 due to applicability date:

Regulation 401 KAR 60:480, Standards of performance for equipment leaks of VOC in the synthetic organic chemicals manufacturing industry, incorporating by reference 40 CFR 60.482, Subpart VV, applicable to VOC leaks in affected facilities that commenced construction or modification after January 5, 1981.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has not incorporated these provisions in its air quality regulations.